

- 26 -

CLAIMS:

1. A main decking panel for a structural decking system that includes a plurality of the main decking panels, with the main decking panel including:
 - (a) a base component that includes a central pan and lap joints on each side of the pan to enable adjacent main decking panels to be positioned side by side in overlapping relationship; and
 - (b) a strengthening component in the form of an inverted channel member secured to the base component, with the channel member including two opposed side walls formed from web components and a top formed from a chord component, and with the web and top chord components being manufactured as separate components and thereafter assembled together to form the channel member.
2. The main decking panel defined in claim 1 wherein the central pan includes at least one longitudinal stiffener.
3. The main decking panel defined in claim 2 wherein the web components are secured to the base component at locations between the longitudinal stiffener or stiffeners and the lap joints.
4. The main decking panel defined in claim 3 wherein the web components butt against the longitudinal stiffener or stiffeners and/or the lap joints.
5. The main decking panel defined in any one of the preceding claims wherein the lap joints are formed so that a successive decking panel can be positioned in side by side overlapping relationship with another decking panel by pressing the lap joint of the successive decking panel

- 27 -

downwardly over the lap joint of the other decking panel.

6. The main decking panel defined in any one of the preceding claims wherein the strengthening component is
5 secured to the base component at a plurality of discrete connection locations along the length of the channel member.

10 7. The main decking panel defined in claim 6 wherein the strengthening component is secured to the base component at the plurality of discrete connection locations by deformed sections of the components at the locations that interlock the components together.

15 8. The main decking panel defined in claim 7 wherein the deformed sections are button shaped.

20 9. The main decking panel defined in claim 7 or claim 8 wherein the deformed sections are formed by holding the components together and pressing the deformed sections, such as buttons, from one side of the components.

25 10. The main decking panel defined in any one of the preceding claims wherein the web components and the top chord components are assembled together by securing the components together at a plurality of discrete connection locations along the lengths of the components.

30 11. The main decking panel defined in claim 10 wherein the web components and the top chord components are secured together at the plurality of discrete connection locations by deformed sections of the components at the locations that interlock the components together.

35 12. The main decking panel defined in claim 11

wherein the deformed sections are button shaped.

13. The main decking panel defined in claim 10 or
claim 11 wherein the deformed sections are formed by
5 holding the components together and pressing the deformed
sections from one side of the components.

14. The main decking panel defined in any one of the
preceding claims wherein the web components include
10 flanges and the web and top chord components are secured
together at the flanges.

15. The main decking panel defined in any one of the
preceding claims wherein the top chord component includes
15 one or more than one longitudinal stiffener.

16. The main decking panel defined in claim 15
wherein the stiffener or stiffeners extend along the
length of the top chord component.
20

17. The main decking panel defined in any one of the
preceding claims wherein the top chord component includes
down-turned sides.

25 18. The main decking panel defined in any one of the
preceding claims wherein the web components include
corrugations.

19. The main decking panel defined in claim 18
30 wherein the corrugations are vertical corrugations.

20. The main decking panel defined in any one of the
preceding claims wherein web components include openings
to allow concrete to flow into the channel member.
35

21. A structural decking system formed from a
plurality of the main decking panel defined in any one of

- 29 -

the preceding claims positioned side by side with the lap joints in overlapping relationship.

22. The structural decking system defined in claim 21
5 includes one or more than one infill decking panel that is positioned between two main decking panels, with the infill decking panel including lap joints on each side of the pan that are in overlapping relationship with the lap joints of adjacent main decking panels.

10

23. A composite slab that includes the structural decking system defined in claim 21 or claim 22 and a layer of hardened concrete on the structural decking system.